

# EUROPEAN PATENT OFFICE

Patent Abstracts of Japan

PUBLICATION NUMBER : 07075722  
 PUBLICATION DATE : 20-03-95

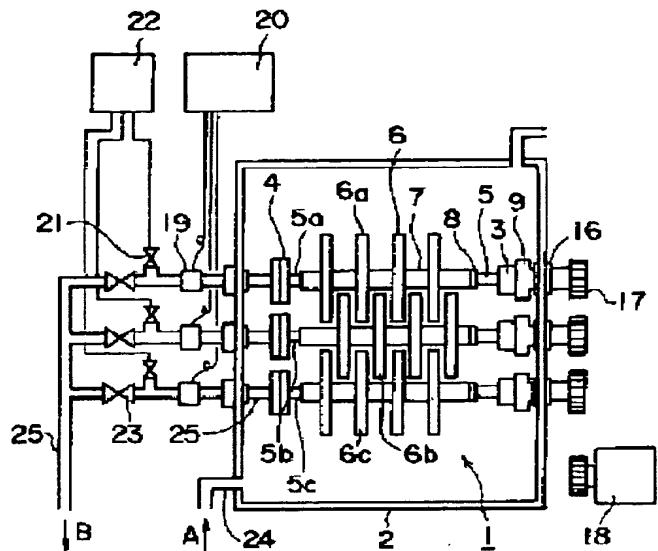
APPLICATION DATE : 10-12-93  
 APPLICATION NUMBER : 05310495

APPLICANT : HITACHI PLANT ENG & CONSTR CO LTD;

INVENTOR : MORI NAOMICHI;

INT.CL. : B01D 63/16

TITLE : LIQUID FILM SEPARATOR



**ABSTRACT :** PURPOSE: To provide equipment with which the concentration polarization near disk films is restricted, and even liquids of high concentration are effectively separated for a long time without requiring excessive energy in a liquid film separator using rotating disk films.

CONSTITUTION: In clearances between disk films 6 attached on one 5a of film permeated water collecting pipes are placed and arranged disk films 6 attached on a film permeated water collecting pipe 5b adjacent to the film permeated water collecting pipe 5a so that adjacent disk films may overlap each other. A film permeated water collecting pipe 5c adjacent to the film permeated water collecting pipe 5b is arranged so that the adjacent disk films may overlap each other.

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PUBLICATION NUMBER : 06210295  
PUBLICATION DATE : 02-08-94

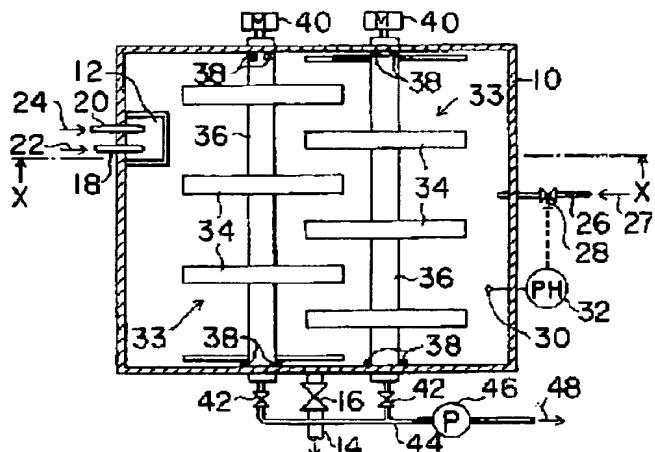
APPLICATION DATE : 21-01-93  
APPLICATION NUMBER : 05008418

APPLICANT : SUMITOMO HEAVY IND LTD;

INVENTOR : MOTOMURA SHOKO;

INT.CL. : C02F 1/52 B01D 21/01 B01D 36/00  
B01D 63/08 B01D 63/16 B01D 65/08  
C02F 1/44

TITLE : FLOCCULATION/FILTRATION DEVICE



ABSTRACT : PURPOSE: To provide an economically advantageous flocculation/filtration device which can achieve the improvement of treatment capacity, minimization of operating power and miniaturization of size.

CONSTITUTION: A water collection rotary shaft 36 with disc-like filtration members 34 aligned side by side at a specified interval is arranged in a filtration tank 10 in a freely rotatable manner. Water to be treated 22 supplied in the filtration tank 10 is filtered and the filtered water 48 is conducted into the water collection rotary shaft 36. Next, the filtered water is drawn by a drawing pump 46. In addition, a flocculating agent 24 and a pH adjusting agent 27 are directly injected into the water to be treated 22 in the filtration tank 10. The water 22, the flocculating agent 24 and the pH adjusting agent 27 are mixed by a gyrating current generated by rotation of the filtration member 34 to form a floc. At the same time, the water 22 is filtered in a condition that the polarization of density is restricted as a rapid current and a turbulence generate on the surface of a membrane. Thus, this flocculation/filtration device does no longer require a flocculation tank, a circulation tank and a circulation pump, so that the device can be made compact and save operating power.

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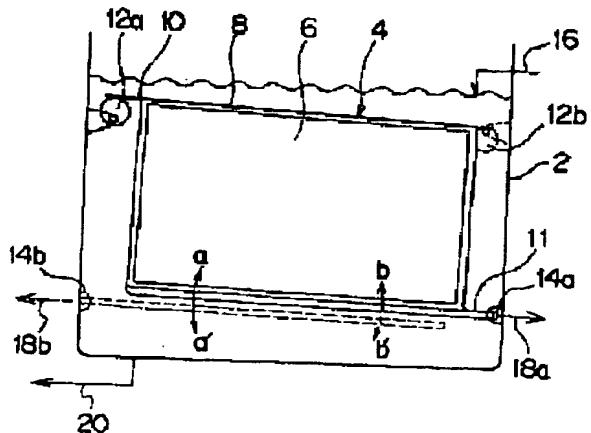
APPLICATION DATE : 28-12-93  
APPLICATION NUMBER : 05351500

APPLICANT : HITACHI PLANT ENG & CONSTR CO LTD;

INVENTOR : KASAI MASATAKA;

INT.CL. : B01D 63/16 B01D 63/08 B01D 65/00  
B01D 65/08

TITLE : FLAT MEMBRANE FILTER APPARATUS



ABSTRACT : PURPOSE: To provide a flat membrane filter apparatus having a simple structure, enhanced in volume efficiency and capable of scaling up the area of a filter membrane.

CONSTITUTION: A pair of plate-shaped filter elements 4 having filter membranes 6 formed on the surfaces thereof are arranged in the liquid stored in a tank 2 and the filtrate obtained through the filter elements 4 is discharged to the outside. A drive mechanism subjecting at least a pair of the plate-shaped filter elements 4 to reciprocal motion or revolving motion in mutually opposed directions is installed. One filter element 4 is moved along a locus of a-a' by an eccentric cam drive device 12a and the adjacent filter element 4 is moved along a locus of b-b' by an eccentric cam drive device 12b and both filter elements are reciprocally moved in mutually opposed directions.

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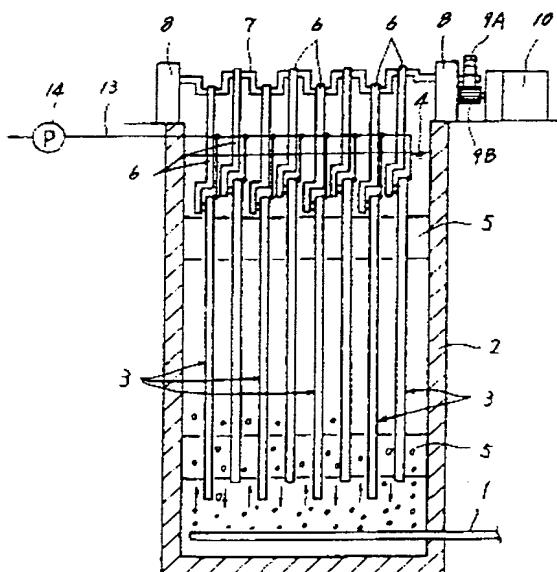
APPLICATION DATE : 19-12-89  
APPLICATION NUMBER : 01328960

APPLICANT : KUBOTA CORP;

INVENTOR : IZUMI SEIJI;

INT.CL. : B01D 61/14 B01D 63/08 C02F 1/44

TITLE : FILTRATION TREATING METHOD



ABSTRACT : PURPOSE: To prevent stickiness of concd. sludge to surface of filter films and to improve filtering efficiency by setting plural flat plate-like filter films in the vessel in mutually parallel and relatively reciprocating the adjacent filtering film in the reverse direction each other along the direction of filtering film surfaces.

CONSTITUTION: The filtering film 3 is formed by stretching the film bodies at both face of a square frame body and plural flat platelike filter films 3 are set in the reaction vessel 2 mutually parallelly at the prescribed intervals and dipped into the active sludge mixed liquid 4 in the vessel 2. Each filtering film 3 is connected to a crank shaft 7 as rotatable with an arm member 6 and by rotating the crank shaft 7, the adjacent filtering films 3 are ascended/ descended in the reverse direction each other through a guide member 5. At the time of filtering the mixed liquid 4 by sucking inner part of the filtering films 3 with suction of a suction pump 14, the concd. sludge is apt to stick to the surface of filtering film 3, but this is separated from the surface with the vertical motion in mutually reverse direction and the filtering efficiency is made to good.

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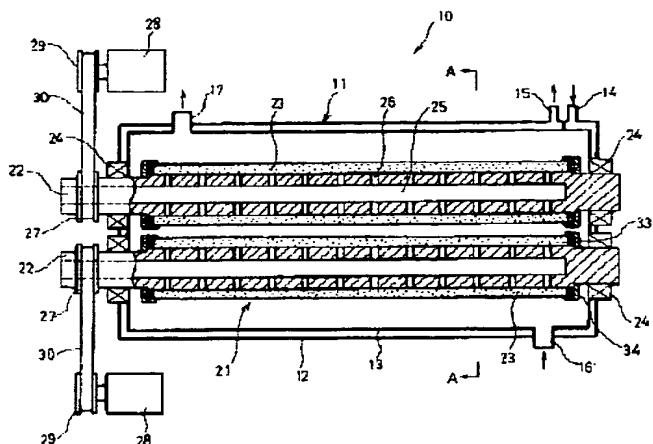
APPLICATION DATE : 27-09-91  
APPLICATION NUMBER : 03277020

APPLICANT : TOTO LTD;

INVENTOR : SHIMODERA KENICHI;

INT.CL. : B01D 63/16 B01D 63/06 C12M 1/12

TITLE : MEMBRANE SEPARATOR



ABSTRACT : PURPOSE: To prevent lowering of membrane permeation flux in a lapse of time by removing a cake layer, which sticks on a surface of a separation membrane, without using special power or a cleaning member.

CONSTITUTION: In the membrane separator, plural filtration membrane unit 21 is provided in the tight closed vessel 11. The inflow opening 16 of a solution to be treated and the outflow opening 17 of a concentrated solution are provided through the outside case 12 in the inside case 13 of the tight closed vessel 11. The filtration membrane unit 21 consists of the hollow rotary shaft 22 and the cylindrical separation membrane 23 provided on the outer circumferential surface of the hollow rotary shaft 22. The hollow rotary shaft 22 is supported freely rotatably with the bearing 24 through the tight closed vessel 11, the hollow rotary shaft 22 adjacent to each other are closely arranged in parallel and the communicating hole 26 is formed to introduce the permeating solution, which permeates the cylindrical separation membrane 23 at regular interval in axial direction, into the hollow part 25, in which the permeating solution flows as a passage.

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PUBLICATION NUMBER : 05228349  
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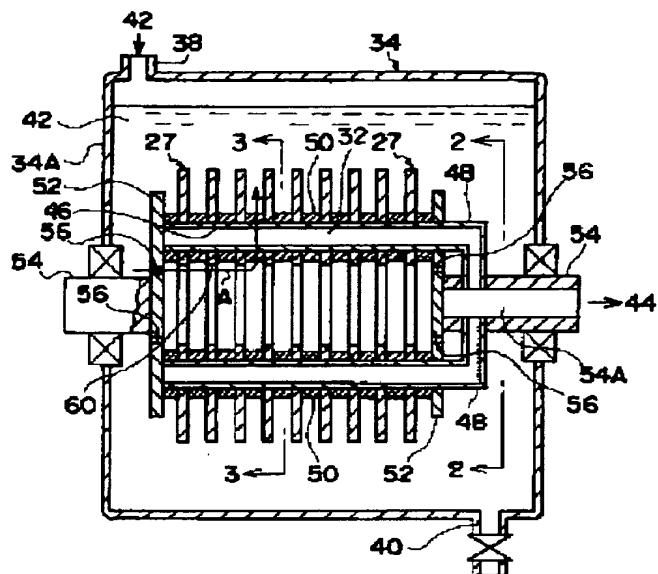
APPLICATION DATE : 17-08-92  
APPLICATION NUMBER : 04217748

APPLICANT : NITTO DENKO CORP;

INVENTOR : SENSEI TEIZO;

INT.CL. : B01D 63/16 B01D 63/08

TITLE : LIQUID MEMBRANE SEPARATOR



ABSTRACT : PURPOSE: To prevent the stagnation of a liquid to be treated near the center of rotation of planar membranes.

CONSTITUTION: The plural planar membranes 27 to be driven to rotate are disposed to face each other apart a prescribed spacing. A through-hole 60 communicating both flanks of the planar membranes 27 is formed in each planar membrane 27. The liquid 42 to be treated is positively stirred by passing these through-holes 60, by which turbulence is generated. The liquid 42 to be treated existing near the center of rotation of the planar membranes 27 is fluidized and is substd. with the other liquid.

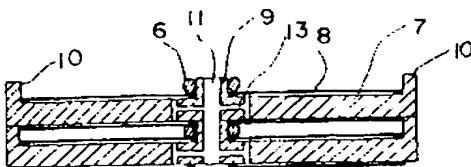
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PUBLICATION NUMBER : 61025607  
 PUBLICATION DATE : 04-02-86

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 APPLICATION NUMBER : 59144379

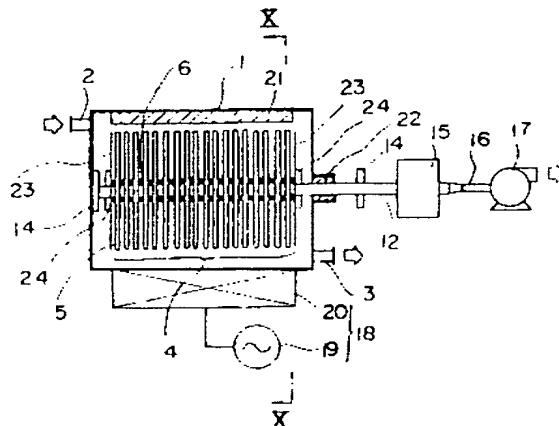


APPLICANT : SANKI ENG CO LTD;

INVENTOR : MURATANI NORIO;

INT.CL. : B01D 13/00

TITLE : SEPARATING DEVICE USING  
 MEMBRANE



**ABSTRACT :** PURPOSE: To prevent formation of gel layer on a membrane with small energy consumption by building up a membrane plate formed by attaching a circular thin film to a discoid supporting member and executing filtration while revolving the membrane plate around a revolving shaft penetrating through a central through-hole.

**CONSTITUTION:** A membrane module 4 is prep'd. by building up plural sheets of membrane plate 5 formed by attaching circular thin film 8 on both sides of a discoid supporting member 7 provided with a projection 9 at the center and a through hole 11 and a passage 13 for the permeated liquid. The membrane module 4 is revolved around a revolving shaft 12 serving also as a discharging pipe of permieated liquid which is inserted through a central through-hole of the membrane module 4, thus, the membrane module 4 is moved relatively to the liquid to be filtered which is introduced from an inlet 2 of the liquid. The permeated liquid is sucked by a suction pump 17 through the revolving shaft 12 and discharged through the discharging pipe 16 for the liquid permeate.

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